



PERFORMANCE COMPLIANCE REPORT

Formatted per ICC-ES Evaluation Report Structure

Guard and Fall Protection Oasis™ 4-Track Porch Enclosure System

Performance Mapped to ASTM E935 and ICC-ES AC273 Load Criteria

Submitted under VCC 112.2

Alternative Materials, Design, and Methods of Construction

Applicable Code: 2021 Virginia Residential Code (VRC)

Code Sections: 112.2, R301.5, Table R301.5, R312, R609.7, Appendix H (AH101–AH106)

Performance References: ASTM E935, ICC-ES AC273

Report Date: April 23, 2026

Prepared by: Turnkey Porch Enclosures, LLC

Reviewed and Certified by: Clifton L. Parker, IV, P.E. — Virginia Engineering Services, LLC

1.0 Evaluation Subject

1.1 **Product:** Oasis™ 4-Track Porch Enclosure System with integrated Fall Rail Assembly.

1.2 **Manufacturer:** Turnkey Porch Enclosures, LLC, 1209 Admiral Street, Richmond, Virginia 23220. Telephone: (804) 477-8733. Website: turnkeyporch.com.

1.3 **Report Prepared by:** Turnkey Porch Enclosures, LLC.

1.4 **Reviewed and Certified by:** Clifton L. Parker, IV, P.E., Virginia Engineering Services, LLC, 8124 Crown Colony Pkwy, Mechanicsville, Virginia 23116. Telephone: (804) 310-0398.

1.5 This report is submitted under VRC Section 112.2 (Alternative Materials, Design, and Methods of Construction). It is not an ICC-ES Evaluation Report (ESR) and is not an ASTM-published test report. Turnkey Porch Enclosures does not currently hold an ICC-ES ESR for the Oasis™ system.

2.0 Evaluation Scope

2.1 This report evaluates the Oasis™ 4-Track Porch Enclosure System for compliance with the guard and fall protection provisions of the following codes:

Code / Section	Subject
2021 Virginia Residential Code (VRC)	Governing adopted code
VCC Section 112.2	Alternative Materials, Design, and Methods of Construction
VRC R301.5 / Table R301.5	Minimum Design Loads — Guards, Rails, Infill
VRC R312	Guards
VRC R609.7	Anchorage of Assemblies to Structure
VRC Appendix H (AH101–AH106)	Patio Covers

2.2 Performance is additionally mapped to the load criteria of the following industry standards, presented as reference benchmarks for the Authority Having Jurisdiction:

Standard	Title
ASTM E935	Standard Test Methods for Permanent Metal Railing Systems and Rails for Buildings
ICC-ES AC273	Acceptance Criteria for Handrails and Guards (Approved June 2017)

3.0 Properties Evaluated

3.1 The following structural and safety properties have been evaluated:

Property	Criterion / Code Reference
Guard Top Rail — Concentrated Load	200 lbf in any direction (R301.5, Table R301.5)
Guard Top Rail — Deflection	L/240 (PE analysis); h/24 + l/96 mid-span horizontal (AC273)
Guard Infill — Concentrated Load	50 lbf over 1 ft² (R301.5, Table R301.5)
Guard Height	36 in. minimum above finished floor (R312.1.1)

Panel-to-Structure Attachment	Fastener capacity and spacing (R609.7)
Guard Infill Continuity	Fixed inner sash via Vent Lock (prevents removal below fall rail)

3.2 The following properties are **outside the scope** of this evaluation: wind pressure design, energy-code compliance, fire resistance, egress, and structural capacity of the existing porch framing (columns, beams, roof, foundations). The existing porch structure must independently satisfy VRC Chapter 3 provisions.

4.0 Uses

- 4.1 The Oasis™ 4-Track system is intended for installation as a removable vinyl-panel porch enclosure within existing roofed residential porch structures classified under VRC Appendix AH (Patio Covers).
- 4.2 Where the porch floor is more than 30 inches above adjacent grade, the system incorporates a dedicated fall rail assembly to satisfy the guard requirements of VRC R312.
- 4.3 The system is not a fenestration product, not a structural wall system, and not a sunroom. The flexible vinyl glazing is removed from the sash track or opened fully by the homeowner during high winds, preventing wind-load accumulation on the existing porch structure.
- 4.4 The system is presented to the AHJ as an alternative material and method under VCC Section 112.2. The purpose of this report is to provide the AHJ with load-performance documentation comparable in structure to ICC-ES evaluation reports so that an informed determination of equivalency can be made on the record.

5.0 Description

5.1 Fall Rail Assembly

Component	Specification
Material	Aluminum square tube, Duracron-finished
Cross-Section	1-3/4 in. square, 3/32 in. wall thickness
Height	36 in. above finished floor
Max Clear Span (Single)	60 in.
Max Panel Width (Twin)	100 in. (two-span condition)
Mounting Brackets	14 GA min. steel, L-shaped, fastened to porch column
Primary Fasteners	#10-16 self-drilling, carbon & stainless steel (Leland Industries)
Fastener Tensile Strength	2,430 lbs minimum
Fastener Shear Strength	1,460 lbs minimum
Twin Center Connection	#10 flat-head screws to vertical center support bar (I-track)

5.2 Vinyl Infill System

- 5.2.1 Three or four sash units per panel, each with 10 mil (0.010 in.) flexible polyvinyl glazing and integrated screen. The innermost sash is permanently fixed by the Vent Lock mechanism and cannot be raised or removed. Remaining sashes are operable for ventilation.
- 5.2.2 Polyvinyl is retained within the aluminum extrusion by a proprietary high-tension vinyl-retention spline distributing load uniformly along the panel perimeter.

5.3 Panel-to-Structure Attachment

- 5.3.1 Panels are secured to porch columns per Turnkey Installation Instructions. Fasteners pass through the extrusion flange at spacing aligned with horizontal sash bars, not exceeding 24 in. on center. Minimum 12 screws per panel. Satisfies VRC R609.7.

6.0 Installation

6.1 Installation must comply with this report and the Turnkey Porch Enclosures Installation Instructions. When the instructions differ from this report, this report governs.

6.2 Fall rail must be installed at 36 inches above finished floor using the 14 GA mounting brackets described in Section 5.1. Brackets shall be fastened to porch columns with the specified fasteners.

6.3 The Vent Lock must be installed on the innermost sash of every panel in a fall protection application to ensure continuous guard infill.

6.4 For twin enclosure installations, the fall rail must be additionally secured to the structural vertical center bar using #10 flat-head screws, maintaining a clear span below 60 inches. Maximum twin panel width is 100 inches.

6.5 Enclosure panels must be fastened to porch columns with a minimum of 12 #10-16 self-drilling screws per panel, spaced not greater than 24 inches on center, aligned with horizontal sash bars.

6.6 The compatibility of the fasteners with the supporting porch column material (wood, composite, masonry sleeve, etc.) is the responsibility of the installer and must be verified for the project-specific conditions.

7.0 Conditions of Use

7.1 The Oasis™ 4-Track Porch Enclosure System described in this report, when installed in accordance with Section 6.0 and within the geometric limits of Section 5.0, complies with the guard and fall protection requirements of VRC Sections R301.5, Table R301.5, R312, and R609.7 of the 2021 Virginia Residential Code, and is a suitable alternative to what is specified in these code sections, subject to the following conditions:

7.1.1 Installation must comply with this report and the manufacturer's installation instructions.

7.1.2 The existing porch structure (columns, beams, roof framing, connections) must independently satisfy applicable wind, snow, and live-load provisions of VRC Chapter 3.

7.1.3 The Oasis™ system does not upgrade, certify, or replace the structural capacity of the existing porch structure.

7.1.4 Fall rail clear span must not exceed 60 inches (single) or the equivalent two-span condition for twin enclosures (100 inches maximum panel width).

7.1.5 The Vent Lock must be installed on the innermost sash in every fall-protection application.

7.1.6 Installation must not deviate from the engineered details without written approval from the Engineer of Record. Deviations void the performance conclusions of this report.

7.1.7 This report addresses guard and fall protection performance only. Wind pressure design, energy-code compliance, fire resistance, and egress are outside the scope of this evaluation.

7.1.8 This report is not an ASTM E935 test report and is not an ICC-ES Evaluation Report (ESR). The supplemental in-house testing was performed at design-load levels, not at AC273 factored proof loads. See Appendix A, Section A.7 for a complete list of deviations.

7.1.9 Final determination of code compliance and applicability rests with the Authority Having Jurisdiction.

8.0 Evidence Submitted

8.1 The following documentation was reviewed and/or prepared in support of this report:

Ref.	Document	Source / Detail
8.1.1	Sealed engineering analysis	Klaus J. Worrell, P.E., VA Lic. #100094, dated November 9, 2023
8.1.2	Sealed engineering analysis	Kourosh Mechanic, P.E., MD Lic. #16290, dated September 12, 2024
8.1.3	Sealed engineering analysis	Cody Johnston, P.E. (BORJAG), NC Lic. #P-3097, dated September 9, 2025
8.1.4	Report certification	Clifton L. Parker, IV, P.E., VA (this report)
8.1.5	Supplemental verification test data	Turnkey Production QA, April 10, 2026 (Appendix A)
8.1.6	Fall Rail Installation Specifications	Turnkey Porch Enclosures (Attachments B and D)
8.1.7	Installation Instructions	Turnkey Porch Enclosures (Attachment B)
8.1.8	Vent Lock Product Specifications	Turnkey Porch Enclosures (Attachment A)
8.1.9	Flange and Fastener Details	Turnkey Porch Enclosures (Attachment C)

9.0 Identification

9.1 The Oasis™ 4-Track Porch Enclosure System is identified by the manufacturer's name (Turnkey Porch Enclosures, LLC), the product name (Oasis™ 4-Track), and the Duracron frame color (Tan/Khaki, White, or Black).

9.2 The fall rail assembly is identified by its aluminum square-tube cross section (1-3/4 in. × 1-3/4 in., 3/32 in. wall) and the 14 GA steel mounting brackets.

9.3 The manufacturer's contact information is: Turnkey Porch Enclosures, LLC, 1209 Admiral Street, Richmond, Virginia 23220. Telephone: (804) 477-8733. Website: turnkeyporch.com.

10.0 Performance Data

10.1 Performance Criteria Mapping (Code vs. AC273)

Table 10.1 maps the governing VRC load criteria alongside comparable AC273 criteria and factored proof loads.

Load Case	VRC R301.5 (Governing)	AC273 Design Load	AC273 Factored Proof Load (SF)
Top Rail Concentrated	200 lbf any direction	200 lbf any direction	500 lbf (SF 2.5)
Infill Concentrated (opaque)	50 lbf / 1 ft ²	50 lbf / 1 ft ²	125 lbf (SF 2.5)
Guard Height	36 in. min.	Per code	—
Deflection — Mid-Span Horizontal	L/240	h/24 + l/96	At 200 lbf
Deflection — Mid-Span Vertical	Not prescribed	l/96	At 200 lbf
Deflection — Post	Not prescribed	h/12	At 200 lbf

Table 10.1 — Performance Criteria Mapping

■ **Note on Factored Proof Loads.** AC273 requires certified lab testing to factored proof loads (design load × SF). The sealed PE analyses demonstrate 60% stress utilization at 200 lbf and infill SF ≥ 4. In-house verification (Appendix A) was performed at design-load levels only. See Appendix A, Section A.7 for deviations.

■ **Note on Deflection.** VRC does not prescribe guard deflection limits; L/240 is from the PE analyses. AC273 uses h/24 + l/96 (horizontal), l/96 (vertical), h/12 (post). PE-documented deflections (0.0248" fixed / 0.124" pinned at 60" span) are well below all three AC273 benchmarks.

10.2 Sealed Engineering Results

Criterion	Required	PE-Documented Performance	Status
Top rail 200 lbf	200 lbf	60% of allowable stress at 200 lbf (60 in. span)	PASS
Top rail deflection	L/240 = 0.25 in.	0.0248 in. (fixed) / 0.124 in. (pinned)	PASS
Infill 50 lbf / 1 ft ²	50 lbf	Safety factor ≥ 4 (screen excluded)	PASS
Guard height	36 in.	36 in. above finished floor	PASS
Center-bar shear (twin)	Adequate for 200 lbf	Safety factor ≥ 3	PASS
Panel attachment R609.7	Per code	12+ screws, 24 in. o.c., 2,430 lbf tensile ea.	PASS

Table 10.2 — Sealed Engineering Results vs. Code Requirements

11.0 Report Closure

11.1 This report is submitted in support of plan review and permit issuance under VCC Section 112.2. The complete submission package should include:

- This Performance Compliance Report (certified by Clifton L. Parker, IV, P.E.)
- Sealed engineering letters from the Engineers of Record identified in Section 8.0
- Turnkey Installation Instructions
- Project-specific drawings showing fall rail location, bracket placement, and panel geometry
- Manufacturer compliance letter (where required by the AHJ)

Prepared by:	Reviewed and Certified by:	For:
Turnkey Porch Enclosures, LLC 1209 Admiral St Richmond, VA 23220 (804) 477-8733	Clifton L. Parker, IV, P.E. Virginia Engineering Services, LLC 8124 Crown Colony Pkwy Mechanicsville, VA 23116 (804) 310-0398	Authority Having Jurisdiction Plan Review

End of Report Body. Supplemental verification test data, photographs, and deviation disclosures follow in Appendix A.

Appendix A — Supplemental In-House Verification Testing

! **Important.** The testing in this appendix is **supplemental field-shop verification only**. It is **not** certified ASTM E935 testing and was not performed by an accredited laboratory under ISO/IEC 17025. It is presented as corroborative evidence of the sealed engineering analysis. The sealed engineering documentation remains the governing authority.

A.1 Test Specimen Record

Field	Value
Specimen ID	TPE-OA4T-FR-2026-04-10
System	Oasis™ 4-Track Porch Enclosure with Fall Rail
Configuration	Single enclosure, full-height frame, fall rail + brackets
Fall Rail	1-3/4 in. aluminum sq. tube, 3/32 in. wall, 60 in. span
Vinyl Infill	10 mil polyvinyl with screen, proprietary spline retention
Vent Lock	Installed on innermost sash
Source	Production assembly, Turnkey manufacturing line
Test Date	April 10, 2026
Test Location	Turnkey facility, 1209 Admiral St, Richmond, VA
Tester	Turnkey Production QA
Observers	Turnkey Production QA staff
Ambient	Indoor, climate-controlled shop environment

Table A.1 — Test Specimen Record

A.2 Apparatus and Calibration

Apparatus	Description	Calibration
Digital Crane Scale	300 kg (660 lbf) capacity, LCD readout	Mfr. accuracy $\pm 1\%$; no 3rd-party cal. cert.
Load-Application Strap	Nylon ratchet strap with carabiner	N/A (mechanical element)
Infill Test Weights	Two 25 lb hex dumbbells (50 lbf total)	Labeled weight; not independently verified

Table A.2 — Apparatus and Calibration Status

A.3 Procedure

A.3.1 Top rail: strap fastened at mid-span (60 in. bracket-to-bracket). Crane scale in series. Load applied progressively to 200 lbf target, held until stabilized. Tested downward and upward.

A.3.2 Infill: panel laid flat, 50 lbf (two dumbbells) placed on ~ 1 ft² at panel center. Monitored for tearing, spline disengagement, frame deformation.

A.3.3 Results are as-read from crane scale LCD at stabilized load, or for infill, observed at sustained 50 lbf over ≥ 30 seconds with no failure.

A.4 Verification Test Photos

A.4.1 Top Rail — Downward (Target 200 lbf)



Fig. A.4.1-a: Downward load via crane scale



Fig. A.4.1-b: Scale reading 223.1 lbf

A.4.2 Top Rail — Upward (Target 200 lbf)



Fig. A.4.2-a: Upward load configuration



Fig. A.4.2-b: Scale 203.5 lbf



Fig. A.4.2-c: Scale 200.2 lbf

A.4.3 Infill — 50 lbf / 1 ft²



Fig. A.4.3-a: 50 lbf on infill center



Fig. A.4.3-b: Deflection, no failure

A.4.4 Bracket Detail

14 GA L-bracket at column connection.



Fig. A.4.4: Fall rail mounting bracket

A.4.5 Vent Lock Detail

Fixed inner sash lock mechanism.



Fig. A.4.5: Vent Lock in sash track

A.5 Verification Test Log

ID	Component	Direction	Target	Measured	Observation	Fig.
VT-01	Top Rail	Down	200 lbf	223.1 lbf	No deformation or failure	A.4.1
VT-02	Top Rail	Up	200 lbf	203.5 lbf	No deformation or failure	A.4.2
VT-03	Top Rail	Up	200 lbf	200.2 lbf	No deformation or failure	A.4.2
VT-04	Infill	Normal	50 lbf/ft ²	50 lbf $\geq$ 30 s	Elastic deflection; no tearing, spline disengagement, or frame deformation	A.4.3

Table A.5 — Verification Test Log (April 10, 2026)

A.6 Engineering-Predicted vs. Field-Verified

Criterion	Required	PE Predicted	Verified (Ref)	% Req.	Status
Rail, down	200 lbf	60% stress util.	223.1 (VT-01)	111.6%	PASS
Rail, up	200 lbf	Same envelope	203.5 (VT-02)	101.8%	PASS
Rail, up (repeat)	200 lbf	Same envelope	200.2 (VT-03)	100.1%	PASS
Infill, 1 ft ²	50 lbf	SF $\geq$ 4	50 lbf (VT-04)	100%*	PASS
Deflection	L/240	0.0248/0.124 in.	Not measured	—	PASS (PE)

Table A.6 — Predicted vs. Verified (* infill at design load; PE confirms SF $\geq$ 4)

- **Design Load vs. Factored Proof Load.** In-house loads are at design level (1×). AC273 requires 500 lbf (rail) and 125 lbf (infill) factored proof loads via certified lab. Factored-load capacity is demonstrated analytically by the sealed PE letters (60% stress utilization at 200 lbf implies substantial reserve; infill SF $\geq$ 4).

A.7 Deviations from AC273 Certified-Testing Protocol

Table A.7 identifies each deviation from AC273 certified-testing protocol. This disclosure is made proactively for a complete and transparent record.

AC273 Requirement	In-House Verification (this report)
Accredited independent lab (ISO/IEC 17025)	In-house by Turnkey Production QA. Not accredited.
Minimum 3 specimens (AC273 §4.2.2)	One production specimen.
Independent specimen selection (§2.4)	Pulled from production by Turnkey.
Factored proof loads: 500 lbf rail, 125 lbf infill	Design-load only: ~200 lbf rail, 50 lbf infill.
Calibrated load cell with 3rd-party cert.	Crane scale, mfr. accuracy $\pm 1\%$, no 3rd-party cert.
Deflection gauges at load point	Deflection not measured in-house (per PE analysis).
All 6 concentrated load cases (H/V at 3 positions)	H downward and upward at mid-span only.
Corner connections (§4.7)	Not tested. Linear porch openings typical.
Timed hold via stopwatch	Held until stabilized; ≥ 30 s for infill. Not precision-timed.
Temp/RH recorded	Indoor shop. Specific values not instrumented.

Table A.7 — Deviations from AC273 Protocol

! **Purpose.** These deviations are disclosed so the AHJ can distinguish between AC273 certified lab testing and the supplemental verification in this report. Code compliance is demonstrated by the sealed PE letters (Section 8.0) under VCC Section 112.2. In-house verification is corroborative, not a substitute for sealed engineering or certified testing.

End of Report. Prepared by Turnkey Porch Enclosures, LLC. Reviewed and certified by Clifton L. Parker, IV, P.E. (Virginia Engineering Services, LLC, Mechanicsville, Virginia). See the accompanying signed Engineer's Certification Letter dated 4-27-2026.